1994 Pollution Prevention Evaluation Report

Department of Environmental Quality
Office of Pollution Prevention

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Executive Summary

In 1993, the Virginia General Assembly adopted pollution prevention legislation that establishes a state policy to promote source reduction as the first choice among environmental management options and to minimize the transfer of waste from one environmental medium to another. One requirement of the 1993 law is for the Department of Environmental Quality (DEQ) to establish a pollution prevention technical assistance program and to submit a evaluation report on this program to the Governor and the appropriate committees of the General Assembly yearly on December 1. The Office of Pollution Prevention (OPP), a non-regulatory, voluntary pollution prevention technical assistance program, was an existing program within the Department's Division of Policy and Research in 1993; the legislation helped to add focus to the existing program.

From 1990-1993, the primary activities of the Office involved the Interagency Multimedia Pollution Prevention project, the goal of which was to establish a cooperative pollution prevention effort between the former Department of Waste Management, Department of Air Pollution Control and State Water Control Board before they were consolidated into DEQ in 1993. Currently, OPP is working to identify opportunities that institutionalize incentives for voluntary pollution prevention within the Department's regulatory programs, in particular within permitting, inspections, and enforcement operations.

Technical assistance and marketing are at the core of the program. The Office offers clients customized research, and clients have direct access to engineering staff and other researchers for pollution prevention advice. Other activities include developing publications and other outreach materials, and conducting site visits to evaluate pollution prevention options. The central resource of the Office is an information clearinghouse that contains an extensive collection of fact sheets, case studies, hardcopy publications, videos, journals, consultant and vendor files, and other materials related to pollution prevention. In order to meet the demands of the diverse audiences served by the program, OPP uses a variety of information transfer techniques, primarily training, presentations and information products in motivating organizations to adopt pollution prevention strategies and to educate these groups on how to implement pollution prevention projects.

From January, 1993 through the end of October, 1994, OPP received 629 requests for information, or approximately 1.5 per day. Requests, which come in the form of both telephone and written inquiries, concerned OPP informational products (69%), questions that required significant research relating to pollution prevention in industry-specific settings (35%), and requests for EPA pollution prevention publications (30%). Response to the program, its staff and its services has been overwhelmingly positive, as evidenced by survey responses and other feedback. Clients have indicated in surveys that the need in Virginia for the types of outreach efforts undertaken by OPP continues and is growing, OPP "customer service" is excellent, industry needs assistance in understanding environmental regulations, and industry is very interested in financial assistance for

pollution prevention, preferably in the form of tax relief for equipment purchases. Businesses, particularly manufacturers who are subject to an increasing number of costly environmental regulations, appreciate the dual goals of pollution prevention: promoting environmental quality and economic growth.

In early 1994, the Department created the Virginia Pollution Prevention Advisory Committee, a 23-member panel that consists of representatives from industry, education, environmental and public interest groups, and local, state and federal government organizations. This committee has advised OPP to maximize the voluntary technical assistance that is available, to integrate pollution prevention within the entire Department structure, to coordinate with EPA regarding federal voluntary pollution prevention programs, to continue investigating ways of removing regulatory barriers, and to keep the program broadly focused to include organizations other than manufacturers.

The Department has made significant progress in its pollution prevention efforts from 1993-1994. Building on activities that were initiated before the creation of DEQ in 1993, with Virginia pollution prevention legislation as a guide, the Office of Pollution Prevention has secured its role as the focal point of pollution prevention activities within the Commonwealth.

Program Summary

The Office of Pollution Prevention (OPP), originally called the Waste Minimization Program, was established in the fall of 1988 in the Office of Policy, Planning and Public Affairs, a non-regulatory branch of the former Department of Waste Management, as a free, voluntary pollution prevention technical assistance program. Basic program services, such as an information clearinghouse and technical assistance, were established in the initial years of the program.

During the period 1990-1993, the primary activities of the Office were those associated with the Interagency Multimedia Pollution Prevention (IMPP) project, funded under a grant from the United States Environmental Protection Agency (EPA). The goal of the IMPP project was to establish a cooperative pollution prevention effort between the Department of Waste Management, the Department of Air Pollution Control and the State Water Control Board, formerly the three principal environmental regulatory agencies in Virginia before they were consolidated into the Department of Environmental Quality (DEQ) in April, 1993.

Under the IMPP project, several industries were targeted for assistance, including ship building and repair, wood furniture manufacturing and commercial printing. Outreach efforts conducted under the IMPP project included workshops for ship repairers, a video for commercial printers and a manual/guide for wood furniture manufacturers, all of which were completed with assistance from trade associations and representatives of the industry. In addition to outreach to industry, the IMPP project team developed a one-day training workshop for staff of the three regulatory agencies, including personnel from the air, water and waste programs.

DEQ was created as the single environmental agency for Virginia in April, 1993. Since that time, the program integration and cooperation begun under the IMPP project has continued. OPP, as a non-regulatory program, is established as an office within the Policy and Research Division.

The core of OPP is an information clearinghouse that contains an extensive collection of fact sheets, case studies, hardcopy publications, videos, journals and other materials related to pollution prevention. The Office offers clients customized research, and clients have direct access to engineering staff and other researchers for advice. Consultant and vendor files, provided to program clients on demand, also are maintained.

The current staff of OPP consists of three full-time (manager, environmental engineer and marketing/sales representative) and three part-time (environmental engineer and two environmental program analysts) employees. Two general functions are at the core of the program: technical assistance and marketing. Activities include providing both telephone

and written consultation, developing publications and other outreach materials, and conducting site visits to evaluate pollution prevention options.

During the past several years, OPP has found that targeted training, in the form of workshops, presentations and teleconferences, is an efficient and effective way of transferring pollution prevention information to a variety of audiences. OPP staff has made more than 35 presentations over the past two years to various audiences across Virginia. Topics addressed include a general pollution prevention overview, how to conduct a pollution prevention opportunity assessment, and pollution prevention techniques for particular industries.

One of the primary ways that OPP has promoted pollution prevention is through the production, marketing and distribution of information products. The purposes of these materials are to motivate organizations to adopt pollution prevention strategies and to educate these groups on how to implement pollution prevention projects. OPP has taken a very broad approach in developing informational materials and tries to tailor each item for its intended audience. For this reason, OPP has moved beyond the traditional report format to means such as videotapes, posters and newsletters.

In addition to the various informational materials produced by OPP, the Office also provides facility-based technical assistance services, primarily in the form of pollution prevention opportunity assessments. The assessment includes the identification and quantification of all waste streams; recommendations are prepared regarding pollution prevention options that could be implemented by the facility to prevent or reduce waste generation. Examples of the types of facilities visited in recent years include chemical, wood furniture, electronics, textile and metal components manufacturers.

OPP has initiated an effort to identify opportunities to institutionalize incentives for voluntary pollution prevention within the Department's regulatory programs. Areas targeted by this effort include the traditional regulatory functions of permitting, inspections and enforcement. To guide the effort, the Department developed an implementation plan in 1994. The plan is intended to identify a process for assessing current pollution prevention activities and to guide future efforts.

The Office functions as the focal point for pollution prevention activities within Virginia. OPP staff members coordinate their efforts with other organizations, such as universities and trade associations. To assist the Department in implementing pollution prevention, an advisory committee consisting of representatives of industry, government, and citizen groups was established in 1993.

I. Introduction

A. Background

In 1993, the Virginia General Assembly adopted pollution prevention legislation (a copy is included as Appendix A). Similar to the federal Pollution Prevention Act of 1990, the Virginia law establishes a state policy to promote source reduction as the first choice among environmental management options, followed in order of preference by reuse, recycling, treatment, and finally disposal. The policy includes minimizing the transfer of waste from one environmental medium (e.g., air, water, or land) to another. The legislation resulted from the efforts of the Joint Subcommittee Studying Pollution Prevention, which has been meeting since the fall of 1992. The Subcommittee is chaired by Senator R. Edward Houck and includes representatives from industry, local government and citizen organizations as well as legislators from both the House of Delegates and the Senate (a list of Subcommittee members is included as Appendix B).

One of the primary features of the 1993 law is the requirement that the Department of Environmental Quality establish a pollution prevention technical assistance program. As stated in §10.1-1425.12 of the law,

> The Department shall establish a voluntary pollution prevention assistance program designed to assist all persons in promoting pollution prevention measures in the Commonwealth. The program shall emphasize assistance to local governments and businesses that have inadequate technical and financial resources to obtain information and to assess and implement pollution prevention measures.

The Office of Pollution Prevention, a non-regulatory, voluntary pollution prevention technical assistance program, was an existing program within the Department's Division of Policy and Research in 1993. In actuality, the Commonwealth's efforts at promoting pollution prevention began in late 1988 with the creation of the Waste Minimization Program in the Department of Waste Management. As the Waste Minimization Program matured and adopted a multimedia focus, its name was changed to the Office of Pollution Prevention. The 1993 legislation, in calling for the establishment of a technical assistance program, helped to add focus to the existing program.

In addition to codifying the Department's pollution prevention program, the legislation authorizes the Department to create advisory panels, sponsor pilot projects, establish a waste exchange and develop grant programs (§10.1-1425.13, §10.1-1425.14, §10.1-1425.15 and §10.1-1425.18 respectively). The Virginia Pollution Prevention Advisory Committee was established in the fall of 1993 to assist the Department in administering the program (see Section VIII-B for more information). To date, the Department has not had the state resources needed to fund pilot projects, grants or a waste exchange.

During the 1994 session, the pollution prevention law was amended to detail the types of activities that the Department's pollution prevention program should pursue. As outlined in §10.1-1425.12.,

> The program may include, but shall not be limited to:
>
> 1. Establishment of a pollution prevention clearinghouse for all available information concerning waste reduction, waste minimization, source reduction, economic and energy savings, and pollution prevention;
> 2. Assistance in transferring information concerning pollution prevention technologies through workshops, conferences and handbooks;
> 3. Cooperation with university programs to develop pollution prevention curricula and training;
> 4. Technical assistance to generators of toxic or hazardous substances, including on-site consultation to identify alternative methods that may be applied to prevent pollution; and
> 5. Researching and recommending incentive programs for innovative pollution prevention programs.

Similar to the original legislation, the amendments assisted the Department in focusing its efforts on those areas deemed most important by the Virginia General Assembly.
The 1993 pollution prevention legislation included a requirement for the Department to submit an evaluation report to the Governor and the appropriate committees of the General Assembly each December 1, beginning in 1994 (§10.1-1425.17). This evaluation report is the first to be submitted by the Department and summarizes the activities of the Office of Pollution Prevention during calendar years 1993 and 1994.

B. History of the Office of Pollution Prevention

The Office of Pollution Prevention (OPP), originally called the Waste Minimization Program, was established in the fall of 1988 in the Office of Policy, Planning and Public Affairs, a non-regulatory branch of the former Department of Waste Management, as a free, voluntary pollution prevention technical assistance program. Although the Department of Waste Management had been involved informally with pollution prevention for several years, a report prepared by the Toxics Roundtable, an association of public interest groups and industry, led to the formal establishment of a program.

During the period 1990-1993, the primary activities of the Office were those associated with the Interagency Multimedia Pollution Prevention (IMPP) project, funded under a $300,000 "Pollution Prevention Incentives for States" grant from EPA. The goal of the IMPP project was to establish a cooperative pollution prevention effort between the Department of Waste Management, the Department of Air Pollution Control and the State Water Control Board, formerly the three principal environmental regulatory agencies in Virginia before they were consolidated into the Department of Environmental Quality

(DEQ) in April, 1993. Each of the participating agencies appointed an internal "champion" to facilitate the incorporation of pollution prevention strategies into agency decision-making.

Under the IMPP project, several industries were targeted for assistance, including ship building and repair, wood furniture manufacturing and commercial printing. In order to ensure that the information was relevant and effective, the IMPP project team developed a different outreach strategy for each of the industry groups. Outreach efforts conducted under the IMPP project included workshops for ship repairers, a video for commercial printers and a manual/guide for wood furniture manufacturers, all of which were completed with assistance from trade associations and representatives of the industry. All pollution prevention outreach conducted under the IMPP project had a multimedia perspective (e.g., impacts related to air, water and land were considered), the first effort of its type in Virginia.

In addition to outreach to industry, the IMPP project team developed a one-day training workshop for staff of the three regulatory agencies. Approximately 300 staff members from the air, water and waste programs, including senior management, attended the workshop in the spring of 1992. The workshop consisted of a pollution prevention overview as well as hands-on exercises that illustrated the concept. Response to the training was overwhelmingly positive, which indicates the high degree of receptiveness among agency staff to pollution prevention as a means of protecting the environment.

DEQ was created as the single environmental agency for Virginia in April, 1993. Since that time, the program integration and cooperation begun under the IMPP project has continued. OPP, as a non-regulatory program, is established as an office within the Policy and Research Division.

The core of OPP is an information clearinghouse that contains an extensive collection of fact sheets, case studies, hardcopy publications, videos, journals and other materials related to pollution prevention. The Office offers clients customized research, and clients have direct access to engineering staff and other researchers for advice. Consultant and vendor files, provided to program clients on demand, are maintained in hard copy and on a computer database.

Current activities of the Office, which are discussed in more detail in the sections that follow, focus on integrating pollution prevention within the Department, as well as within local and regional governmental organizations and other state agencies, through efforts such as training workshops and the production of a quarterly newsletter. OPP staff members work with the Department's regulatory personnel on an increasing basis to identify ways of promoting voluntary pollution prevention. Outreach to industry continues in the form of targeted informational products and workshops.

OPP staff also has been involved in efforts within Virginia to study pollution prevention. In addition to working cooperatively with staff for the Joint Subcommittee Studying Pollution Prevention, OPP staff also has assisted members of the State Advisory Board to the Air Pollution Control Board in producing reports on pollution prevention for both 1993 and 1994.

C. Current Resources

The current staff of OPP consists of three full-time (manager, environmental engineer and marketing/sales representative) and three part-time (environmental engineer and two environmental program analysts) employees. Two general activities are at the core of the program: technical assistance and marketing. Activities include providing both telephone and written consultation, developing publications and other outreach materials, and conducting site visits to evaluate pollution prevention options.

It is difficult to assess the annual budget of the program for a variety of reasons, including that federal grant periods do not coincide with the state fiscal year cycle, and pollution prevention was not an agency budget item until fiscal year 1994. General funds expenditures, estimated at approximately $75,000 per year, have been leveraged to secure federal grant funds. The Department has been very successful in securing federal funding. In addition to the $300,000 IMPP grant outlined previously, the Department was awarded $155,600 in 1993 and $90,000 in 1994, the maximum amount available to the state under the competitive Pollution Prevention Incentives for States (PPIS) grant program. The Department expects to apply for an additional $80,000 under the same program during federal fiscal year 1995. Federal funds received under the PPIS program require a dollar for dollar match in state general funds.

OPP also has received approximately $550,000 for calendar years 1993-1994 under a federal program for management and planning associated with hazardous waste treatment capacity. This funding only required a ten percent state general fund match; however, because the funds are linked to the Superfund program, which by state law will end in 1994, additional funds from this program are not expected.

II. Pollution Prevention Information Clearinghouse

The Office maintains an extensive library of pollution prevention materials. The pollution prevention information clearinghouse contains more than 3,000 books, articles, papers, and videos that cover all aspects of pollution prevention. OPP staff members regularly request copies of reports publicly available from the federal government as well as those developed by other organizations, including other state pollution prevention programs. This exchange of information eliminates unnecessary duplication of effort; many publicly available materials from other government sources are reviewed and tailored to meet the needs of Virginia. In addition, OPP makes its materials available for use by other organizations. An index of these resources is held in a database file, which contains basic information on title, source, and subject as well as notes and keyword fields that allow staff to carry out complex and comprehensive searches for industry, government agencies and the public.

OPP is in the process of securing contractor services to put the information clearinghouse index "on-line" so that the library will be accessible for searching and requesting by other Department staff and the general public. Similar in concept to the service available through the federal Pollution Prevention Information Clearinghouse, but differing in its ability to respond to the needs of Virginia, on-line search and request capacity will enhance greatly both the utilization and usefulness of the information clearinghouse. This capability will make the index available to interested individuals across the state and will enhance further OPP's ability to respond to the expanding number of clients who desire access to Departmental resources via modem. The project is expected to be completed by the fall of 1995.

A recent decision by EPA Region III to provide additional technical assistance to its states will enhance OPP's informational resource base. In late 1994, EPA Region III contracted with EPA Region IV's Waste Reduction Resource Center, located in Raleigh, North Carolina; the Center, which has offered pollution prevention services to the states in Region IV since 1989, has expanded its coverage to include Region III states. The Center will become an additional information resource for OPP staff. Services offered by the Center include an information clearinghouse, vendor files and training support.

III. Pollution Prevention Information Transfer

As a voluntary pollution prevention technical assistance program, information is the most valuable resource available from OPP. Almost all Office activities relate to the transfer of pollution prevention information to its various audiences. In order to meet the demands of the diverse audiences served by the program, OPP uses a variety of information transfer techniques, primarily training, presentations and information products.

A. Training

When discussing the implementation of pollution prevention, one of the most frequently-cited barriers expressed by both regulators and the regulated community is a lack of information. During the past several years, OPP has found that targeted training (i.e., developed with a specific audience in mind), in the form of workshops and teleconferences, is an effective way to overcome this barrier. To meet this need, OPP has offered a number of training opportunities that have been designed to initiate the process of institutionalizing pollution prevention within Virginia.

Workshops. In September 1993, more than sixty environmental engineers and managers from two state agencies, the Virginia Department of Transportation (VDOT) and Virginia Correctional Enterprises (VCE), participated in a two-day pollution prevention training workshop presented by OPP. VDOT and VCE were targeted for the training because maintenance and manufacturing operations at their facilities seemed to present pollution prevention opportunities. Participants were provided an overview of the pollution prevention opportunity assessment process during the first day. On the second day, participants conducted an assessment of another state agency, the Virginia Department of Military Affairs' Air National Guard facility in Sandston.

Response to the training was very positive. Since the training, OPP has learned of several pollution prevention projects that have been initiated by the two agencies. For example, one VDOT facility manager undertook an evaluation of parts cleaning operations which utilize organic solvents and generate hazardous wastes. VCE has switched from solvent-based coatings to powder coatings, which eliminate volatile organic compound (VOC) emissions in their metal operations.

In 1994, the Department received funding from EPA Region III's water program to develop a training program for the state's municipal pretreatment coordinators. In October, 1994, OPP sponsored a pollution prevention training course that was attended by 30 state and municipal pretreatment personnel. The purpose of the training was to educate the participants regarding pollution prevention techniques and ways of integrating pollution prevention into industrial pretreatment inspections, to help facilities meet or surpass regulatory requirements, and to help achieve the Commonwealth's pollution prevention goals.

The first day of the training was classroom instruction, which emphasized techniques for recognizing pollution prevention opportunities when conducting industrial pretreatment inspections. On day two of the training, the participants carried out a pollution prevention opportunity assessment at one of three selected facilities in the Richmond area. The workshop itself was very well received, with participants rating it a 4.3 on a scale of 5. To reinforce the concepts presented at the workshop, six additional site visits are being conducted around the state during the fall of 1994. Because of this program's success,

OPP has requested additional funding from EPA Region III to expand the training in the future.

Teleconferences. An ongoing and integral part of OPP training efforts has been the downlink of national teleconferences on pollution prevention topics. The teleconferences have enabled OPP to deliver high-quality presentations from national experts and environmental officials to interested industrial and governmental managers across the Commonwealth. Admission to all broadcasts is free, and videotapes of the teleconferences are made available by request. Marketing for the teleconferences has included newsletter announcements, press releases, and direct mailings of brochures to targeted segments of the Virginia Manufacturers Directory mailing list.

The teleconferences have covered topics of concern to industry and have provided information on the latest technologies and pollution prevention strategies to help reduce waste and cut costs. The teleconferences have originated from reputable and nationally-known organizations. By arranging downlink sites across the state whenever possible (e.g., through the state's community college system), OPP has provided convenient access to the teleconferences for most Virginians and has prevented the pollution that would have been caused by the travel of participants to one central location.

Since January, 1993, the following teleconferences have been broadcast by OPP:

- "Water-based Alternatives to Solvent Cleaning," February 11, 1993; originating from the Cleveland Advanced Manufacturing Program; broadcast in Richmond; audience of 30 industry representatives.

- "Spray Painting Improvements and Alternatives," June 8, 1994; originating from the Cleveland Advanced Manufacturing Program; broadcast in Abingdon, Annandale, Dublin, Richmond, Virginia Beach, and Weyers Cave; audience of 85 industry representatives.

- "Pollution Prevention for Small Manufacturers," September 21, 1994; originating from Kansas State University; broadcast in Abingdon, Hampton, Lexington, and Richmond; audience of approximately 30 small business representatives.

As noted previously, videotapes of the teleconferences also have been made available, thus increasing the audience size, in some cases significantly.

B. Presentations

OPP staff has made more than 35 presentations over the past two years to various audiences across Virginia (approximately 15 in 1993 and 22 to date in 1994). These presentations have ranged in length from 15 to 90 minutes. Topics addressed include a

general pollution prevention overview, how to conduct a pollution prevention opportunity assessment, and pollution prevention techniques for particular industries. Presentations have been made to several types of audiences, including commercial businesses, manufacturers, planning district commissions, company environmental forums, recycling conferences, federal facilities, state agencies and elementary schools.

In addition to presentations, OPP has developed a table-top display that has been used at conferences and meetings (four in 1993 and four to date in 1994), including the *Environment Virginia* symposium at Virginia Military Institute and Earth Day celebrations at various locations. The display highlights the benefits of pollution prevention and OPP services.

Examples of occasions at which OPP staff has made presentations include:

- Virginia Toxics Release Inventory Workshops: Charlottesville, Richmond, and Roanoke in 1993; Manassas, Richmond, Roanoke, and Virginia Beach in 1994. Audience of several hundred industry representatives per year.

- "Environment Virginia Symposium," Virginia Military Institute, Lexington, April 1993 and 1994. Audience of approximately 100 industry and consulting representatives.

- Thomas Jefferson Planning District Commission (PDC) meeting, Charlottesville, May 18, 1993. Audience of 7 county recycling coordinators and planning district commission officials.

- General Electric "Environet" meeting, Lynchburg, June 16, 1993. Audience of 15 to 20 environmental managers from six facilities.

- Virginia Department of Conservation and Recreation, Division of State Parks, Safety Officer Training, Twin Lakes State Park, November 3, 1993. Audience of approximately 40 safety officers, park managers, and park rangers.

- Virginia Department of Transportation, Richmond District Quarterly Safety Meeting, Colonial Heights, January 20, 1994. Audience of 40 VDOT employees.

- Wise Clean County Committee "Waste in the Workplace Conference Series," Norton, April 12, 1994. Audience of 20 local government, institutional, and small business representatives.

- Clean Valley Council "Waste Management Strategies" conference, Roanoke, March 10, 1994. Audience of 40 to 50 local business representatives.

- "Managing Lands for Reduced Environmental Impacts: A Land Manager's Conference on Water Quality," Fort Monroe, March 24, 1994. Audience of 20 local and state land managers, academia, and service providers.

- Virginia Department of Mental Health, Mental Retardation and Substance Abuse Services "Safety Officer Training," Piedmont Geriatric Hospital, Burkeville, March 24, 1994. Audience of approximately 25 safety directors, safety officers, and hospital facility managers.

- Naval Weapons Station Personnel Training, Yorktown, April 20, 1994. Audience of ten environmental engineers.

- State Advisory Board Annual Conference, Richmond, October 4, 1994. Audience of approximately 100 industry and government representatives.

C. Information Products

One of the primary ways that OPP has promoted pollution prevention is through the production, marketing and distribution of information products. The purposes of these materials are to motivate organizations to adopt pollution prevention strategies and to educate these groups on how to implement pollution prevention projects. OPP has taken a very broad approach to developing informational materials and tries to tailor each item for its intended audience. For this reason, OPP has moved beyond the traditional report format to means such as videotapes, posters and newsletters.

Videotapes. In early 1993, OPP completed the production of its first videotape, "Printers Win Through Pollution Prevention." The ten minute video employs music, graphics and first-hand accounts of pollution prevention successes to motivate medium-sized offset lithographic printers to embrace pollution prevention in company operations. Specific information on the benefits of pollution prevention and guidelines on how to approach this ethic make the video educational as well as motivational. A six-page companion document that lists supplier and association contacts for more information was sent with the video to approximately 200 printers throughout the Commonwealth; printers with more than 20 but less than 250 employees were targeted for this outreach. Subsequently, another 200 videos have been distributed to printers and other interested parties, and the video has been included as part of the environmental curriculum of the national Printing and Graphic Communication Association.

A video entitled, "Pollution Prevention and the Virginia Manufacturer: Making a Difference," was produced in the spring of 1994 by Virginia Military Institute Research Labs under a grant from OPP. The 18-minute video presented case studies in pollution prevention from five Virginia companies. Advertised through the newsletter, OPP has received more than 50 requests for the video (see Section IV for more information).

Posters. To promote pollution prevention better on shop floors and among the general public, OPP used federal grants to produce and to distribute two attractive 21" x 25" posters on pollution prevention in early 1994. The posters were designed to be displayed prominently (i.e., on facility bulletin boards).

Featuring an illustration of a sleek red sports car, a three-color auto maintenance poster was developed with the title, "Prevent Pollution: Stop Driving Up Your Costs." The poster lists pollution prevention options for many operations, such as oil changing, brake maintenance, and parts cleaning. The poster was mailed initially to over 3,600 auto service centers and local, state and federal transportation facilities within Virginia. A second mailing of over 2,800 posters to auto dealers, auto parts stores and utilities will be completed in late 1994. In addition to the first direct mailing, approximately 1,200 copies have been distributed by OPP to date per requests.

With the title, "Pollution Prevention: It's Not Just A Drop In The Bucket," the second poster is four-color and was developed for general industrial audiences. This poster shows a pipe leaking into a bucket. Through special effects photography, the bucket is shown turning over, spilling out money in the forms of coins and bills. This poster was sent to 2,700 medium and large-sized manufacturers and has been requested by an additional 250. A second printing of the poster is expected to be completed by the end of 1994.

Newsletter. OPP produces a four-page quarterly newsletter with stories that feature OPP activities and pollution prevention news of general interest; the first issue was distributed in March, 1994. The newsletter, entitled *Pollution Prevention Virginia,* also highlights the successes of programs through its regular "Pollution Prevention Leaders" column, which details how, why and to what extent a company, local government or other organization has pursued pollution prevention. The newsletter is sent to approximately 5,000 companies, governmental officials, associations, environmental groups, media contacts, and individuals in Virginia as well as across the country. As the sole source of pollution prevention information for a large number of Virginians, the newsletter has generated a significant level of positive comment. Future issues will be expanded to six pages.

Fact Sheets. OPP first printed a series of fact sheets in 1991 with consolidated information on a broad range of subjects, including managing empty containers and lead batteries. The purpose of the fact sheets is to provide a concise, easily understood overview of a number of pollution prevention topics and issues.
Thousands of the fact sheets have been distributed since they first were introduced; most of the more than 750 people who have requested information from OPP have received at least one fact sheet from the series.

In the fall of 1994, OPP initiated the first major expansion of the fact sheets with a "Financial Fact Sheet" series that details ways by which organizations may overcome financial barriers to pollution prevention. The first fact sheets in this series have described

federal grant programs; future topics will include total cost accounting, financial analysis software developed to facilitate pollution prevention, and investment payback estimation. By the end of 1994, the entire fact sheet series will be revised to reflect new regulations, technology and topics that are of leading interest. It is expected that the revised and expanded fact sheet series will continue to be popular with OPP audiences.

Reports. To provide in-depth information and analyses on topics of particular interest in Virginia, OPP recently has developed two detailed pollution prevention technical reports. In October, 1993, a manual and guide on pollution prevention for wood furniture finishers was produced, entitled *Pollution Prevention in the Finishing of Wood Furniture: A Resource Manual and Guide*. The manual/guide was developed in anticipation of stricter air emission standards, currently under development for wood furniture finishers as a result of the Clean Air Act Amendments of 1990. The manual/guide presents a number of pollution prevention options presently available to finishers, from new application techniques to alternative coating formulations. A list of equipment and coating vendors, recent articles highlighting case studies and new technologies, and several in-depth reports on specific subjects such as solvent alternatives also are included.

Cogeneration of Steam and Electric Power: Pollution Prevention Opportunities and Options was produced by OPP in the fall of 1994. Cogeneration, the simultaneous production of electricity and useful thermal energy from a single source, is inherently energy-efficient and, therefore, represents a means of pollution prevention. The report is intended to be used as a guide for regulators, cogeneration power plant planners, independent power plant planners, and others to assist them in identifying pollution prevention opportunities and options related to power generation by fossil fuel combustion.

Innovative Technology Grants. OPP has worked with the Department of Mines, Minerals and Energy and the Center for Innovative Technology in the review of National Industrial Competitiveness through Energy, Environment and Efficiency ($NICE^3$) grant applications submitted by Virginia companies. The $NICE^3$ grant program was developed by the U.S. Department of Energy (DOE) and EPA to promote innovative technology projects that have economic, energy and environmental benefits. Two proposals, reviewed by the Department and submitted to the national program in 1993, were not funded by the federal government. However, OPP staff has worked with one potential $NICE^3$ grant recipient this year in preparing a proposal and will continue to promote the program through its outreach efforts, particularly the program newsletter. For example, OPP has promoted other federal grant programs, such as the Agriculture in Concert with the Environment Program; and two programs from DOE, the Innovative Concepts Program and the Energy-Related Inventions Program, through the "Financial Fact Sheet" series described previously in this section.

IV. University Outreach

In late 1993, the DEQ-University Pollution Prevention Workgroup was established to coordinate outreach efforts between OPP and Virginia's state universities. Representatives from the engineering departments at Virginia Military Institute, the University of Virginia (UVA), Virginia Polytechnic Institute and State University (VPI), and Old Dominion University were given basic guidance on establishing a university-based pollution prevention technical assistance program in a workshop that was held on November 11, 1993. The training, which was provided by the University of Tennessee under contract with OPP, focused on establishing outreach programs that utilize engineering students to perform pollution prevention opportunity assessments for companies.

Members of the workgroup have pledged to work cooperatively in seeking funding opportunities and expanding Virginia's pollution prevention efforts (a current list of contacts is included as Appendix C). Each institution has become involved in one or more pollution prevention efforts during the past several years.

Virginia Military Institute Research Laboratories (VMIRL) presents the *Environment Virginia* symposium, which focuses primarily on pollution prevention, each spring to an audience of more than 450 industry, consulting and government representatives. Fifty exhibitors were present at the 1994 conference. VMIRL produced a video entitled, "Pollution Prevention and the Virginia Manufacturer: Making a Difference," and an accompanying manual in 1994 on pollution prevention opportunities for industry in addition to the conference. The Department provided a grant in support of the video project, and OPP staff as well as consultants contributed to the manual. The manual features chapters on printing, textile production, metals fabrication, and mining and is being distributed by both the Department and VMIRL. The video highlights pollution prevention successes at a number of Virginia companies, including General Electric Drive Systems (Salem), Merck Company (Elkton), DuPont Spruance (Richmond), Aqualon (Hopewell), and Loral Federal Systems (Manassas). VMIRL currently is developing a manual and video on pollution prevention opportunities for local governments; this effort is also a cooperative endeavor between VMIRL, the Department, consulting firms and other organizations.

The Institute for Environmental Negotiation and the UVA Darden School recently completed the study, "Virginia Small Business: Competitive Opportunities through Pollution Prevention and Toxics Management," in cooperation with the Management Institute for Environment and Business of Washington, D.C. The study, which was completed with the assistance of OPP and the Virginia Pollution Prevention Advisory Committee (see Section VIII-B for more information on the committee), examines the benefits of pollution prevention for small businesses. Six industries were studied: wood furniture manufacturing, lithographic printing, textiles, marine repair and maintenance, electroplating, and dry cleaning. The report recommends that pollution prevention outreach efforts to small businesses be intensive and coordinated. The authors also recommend several follow-up projects, including a student/faculty research program to

document industries' best management practices and financial returns from pollution prevention; an on-site technical assistance program to identify pollution prevention opportunities, using retired engineers or university personnel; and financial incentives to encourage investment in pollution prevention.

Old Dominion University has introduced a pollution prevention course within the environmental engineering curriculum to instill the prevention philosophy in the facility engineers and plant managers of the future. In addition, the University's Technology Applications Center established the Energy Analysis and Diagnostic Center in 1993 to promote energy efficiency in industry. Funded by DOE, the Center uses engineering faculty and students to analyze energy efficiency opportunities at industrial facilities.

Faculty and graduate students of VPI's civil engineering department conducted a pollution prevention opportunity assessment for a textile manufacturer in Southwest Virginia under a grant from OPP in late 1993. The project has been expanded in 1994 to include three to five additional textile manufacturing facilities; these assessments are expected to be completed by the end of the year. In addition, VPI recently has launched a "green" engineering initiative, which is designed to incorporate waste reduction and pollution prevention principles across the entire curriculum of the College of Engineering.

V. Technical Assistance

In addition to the various informational materials produced by OPP, the Office also provides facility-based technical assistance services, primarily in the form of pollution prevention opportunity assessments. In the past, these services either have been performed by OPP staff or by contractors, including both private and university-based, as secured by the Office. Although the number of assessments is limited by staff size and available contractual resources, the assessments result in case studies that are circulated to a wide audience, thus increasing the impact of the individual assessments significantly.

A. Pollution Prevention Opportunity Assessments

One of the most important services provided by OPP, pollution prevention opportunity assessments offer information and advice to companies that lack pollution prevention expertise. When requested, OPP provides customized on-site technical and research assistance. This service includes evaluating and interpreting the information that firms need to reduce waste, wastewater and air emissions, including the identification of alternative technical solutions. For example, OPP staff introduced a new finishing process to a Virginia manufacturer of brass parts that eliminates the need for using strong acids. The company then worked with its vendor to adapt the new finishing procedure to its manufacturing requirements. It recently began using the new finishing technique, which

will reduce the amount of hazardous waste being generated and also will eliminate a source of toxic emissions.

Approximately 30 facilities are visited annually by OPP technical staff. The purposes of the on-site meetings range from reviewing a company's existing pollution prevention plan to conducting a comprehensive facility pollution prevention opportunity assessment. The assessment includes the identification and quantification of all waste streams; recommendations are prepared regarding methods that could be implemented by the facility to prevent or reduce waste generation at its source. Examples of the types of facilities visited in recent years include chemical, wood furniture, electronics, textile, and metal components manufacturers. As part of this technical assistance, OPP staff also seeks to improve coordination between the vendor community and firms that are trying to find prevention solutions for their environmental concerns.

On occasion, OPP visits several facilities within an industrial sector to introduce and to discuss new technologies that could improve operating efficiencies, and thereby reduce environmental discharges. For example, OPP technical staff visited some of the largest furniture manufacturers in Virginia earlier this year to familiarize them with new developments in spray gun efficiency that could reduce the emissions and wastes associated with their finishing operations. OPP encouraged these furniture facilities to contact vendors and to evaluate the applicability and economics of converting to the new technology.

The Department's permitting staff encourages companies that face new and tighter permit discharge requirements to contact OPP. In these circumstances, OPP researches potential pollution prevention options, which could help in meeting regulatory requirements by reducing or eliminating the toxic constituents of concern at their sources. For instance, an engineer in one of the Department's regional offices became aware that the textile industry in Virginia is faced with tighter discharge limits on its wastewater, limits that may prove to be prohibitively expensive. The engineer contacted pollution prevention staff, and OPP provided grant funding in late 1993 to wastewater specialists from VPI's College of Engineering to perform a pollution prevention opportunity assessment. The study concluded that about 40% of the dyes used could be recycled instead of discharged as a wastewater, and overall water use at the plant could be reduced by half (or 100,000 gallons per day). As noted in Section IV, this study has been expanded to include up to five textile manufacturers in 1994.

Several companies have requested assistance in implementing pollution prevention projects that have been required as part of Supplemental Environmental Projects (SEPs), which are used to mitigate civil charges in an enforcement order (see Section VI-C for more information on SEPs). For instance, OPP staff has worked with a steel fabricator and its paint suppliers to convert the facility's entire painting operation to high solids paint, as an SEP that reduced the plant's volatile organic compound (VOC) emissions by 20%. A

pollution prevention opportunity assessment conducted at the facility revealed that VOC emissions could be reduced further by 50% if changes in the painting process were implemented.

Because of limited resources available for on-site technical assistance (one full-time employee and one part-time employee), federal funds have been used to hire private contractors to conduct pollution prevention opportunity assessments. In late 1993, OPP contracted with the Waste Minimization Assessment Center of the University of Tennessee at Knoxville to conduct pollution prevention opportunity assessments for three manufacturers in the Bristol area. The comprehensive assessments, which were provided to the companies free of charge, resulted in confidential reports that outlined pollution prevention recommendations, including cost savings, implementation costs and expected pay-back time. Case studies based on these assessments were provided to OPP for use by other manufacturers.

Similarly, in 1994, contractual services were secured for pollution prevention opportunity assessments at eight medium-sized manufacturing facilities. The assessments are being offered free of charge, and companies from around the state, including a specialty chemical manufacturer and a circuit board manufacturer, are participating. Pollution prevention opportunities that are identified at these sites will be incorporated into assessment reports, which will be distributed to other Virginia companies with similar manufacturing processes and applications.

B. Responses to Research Inquiries

From January, 1993 through the end of October, 1994, OPP received 629 requests for information, or approximately 1.5 per day (based on a 250-day work cycle per year). Requests, which come in the form of both telephone and written inquiries, fall into three general categories: requests for one or more of the informational products produced by OPP (69%); questions relating to pollution prevention in industry-specific settings (35%), which may require significant research including contacting additional sources for information; and, requests for various EPA pollution prevention publications (30%). The Office maintains a database of all requests received; groups targeted by the program for outreach, such as printers and vehicle maintenance shops, are not included in the database. As the request figures indicate, the products developed and distributed by OPP have been in high demand within the industrial and business arena, as well as by government agencies, community organizations and citizens of the Commonwealth. Response time for research requests averages five business days, while requests for other materials generally are sent within one business day.

Requests for Information Received by OPP
January 1993 - October 1994

Type of Organization	Number of Requests	Percent of Total
Business/Industry	339	54
Government	195	31
Community/Non-Profit	52	8
Educational Institutions	43	7

As summarized here, more than half of all inquiries were from industry and business representatives. Approximately one-third of requests have come from local, state and federal government officials. Community and other non-profit organizations and educational institutions, such as universities and high schools, each account for less than ten percent of all requests. These figures correlate with OPP's marketing efforts: most materials are developed and distributed for industry and government because of their relative rates of waste generation. Thirty-two percent of all requests originated from manufacturing facilities and 11% from consulting firms that assist these businesses and other organizations in preventing pollution; these inquiries comprise the majority of business/industry requests received by OPP.

OPP recognizes the important role that federal, state, and local government agencies play in protecting the environment, both in improving their own operational efficiencies and cost savings and in assisting industries and businesses at the local level with their pollution prevention needs. As might be expected, most (45%) of the requests from government organizations are from state agencies; approximately half of these inquiries are from Department staff, which illustrates the high degree of interest in pollution prevention within the agency. Federal and local government agencies each account for approximately one quarter of all requests from government organizations; as noted elsewhere in this report, both of these groups have been targeted recently by OPP.

Community and non-profit groups, as well as universities and schools, also are playing an increasingly important role in promoting pollution prevention, particularly among the general public. OPP plans to increase its marketing and networking efforts to reach these groups better. For instance, as noted in Section IV, the DEQ-University Pollution Prevention Workgroup was established in 1993 to coordinate pollution prevention outreach activities. OPP staff also has made presentations for environmental educational conferences, elementary schools and community groups.

Almost 80% of the requests for information received by OPP are from within Virginia. The remainder come from other state, national and international organizations, including state and local pollution prevention technical assistance programs, educational institutions and manufacturers. OPP, like most other state pollution prevention technical assistance

programs, has taken advantage of information available from other technical assistance programs. The program has benefitted immensely from the assistance of other states, particularly related to innovative and state-of-the-art pollution prevention information.

Requests for Information Received by Department Region
January 1993 - October 1994

Region	Number of Requests	Percent of Total
1 - Abingdon	30	6
2 - Lynchburg	102	21
3 - Bridgewater	59	12
4 - Fredericksburg	74	15
5 - Richmond	135	28
6 - Chesapeake	85	18

Using the Department's six regions, a geographic analysis of requests indicates that questions are received from all areas of Virginia (see Appendix D for a map of the Department's regional boundaries).

The highest percentage of requests were received from the Richmond area, which is understandable given the number of state agencies and industries present in this metropolitan region. Similarly, as might be expected, more requests for information have come from areas of the state that are industrialized more heavily in comparison to regions that are rural in character. OPP staff will continue to monitor the requests received and will work with the DEQ Pollution Prevention Implementation Workgroup and the Pollution Prevention Advisory Committee to market the program's services better throughout all of Virginia.

VI. Integration of Pollution Prevention Into Departmental Regulatory Programs

In order to maximize the economic and environmental benefits of a pollution prevention strategy, the pollution prevention concept must become integrated fully into the regulatory programs that govern environmental protection. To accomplish this task in Virginia, OPP has initiated an effort by which opportunities to institutionalize incentives for voluntary pollution prevention are identified within the Department's regulatory programs. Areas targeted by this undertaking include the traditional regulatory functions of permitting, inspections, and enforcement. To guide this venture, the Department developed an

implementation plan in early 1994. The plan is intended to identify a process for assessing current pollution prevention activities and guiding future endeavors. However, as indicated in this section, significant progress already has been made by the Department, for example in OPP's review of environmental impact reports that are submitted by state agencies for Departmental examination. OPP staff evaluates these construction proposals for environmental soundness and suggests ways by which pollution prevention options may be implemented better into state agency plans.

A. DEQ Pollution Prevention Implementation Plan

In early 1994, OPP organized the DEQ Pollution Prevention Workgroup, which consists of representatives from key program offices (including Program Support, Public Affairs, Small Business Assistance, Intergovernmental Affairs, Training, Procurement and Regional Offices). To guide the integration of pollution prevention within the agency, the workgroup developed an implementation plan, which was finalized in late March (this plan is included as Appendix E).

The implementation plan identifies the roles and responsibilities of various program offices affected within the agency. The strategy consists of the following steps:

(1) Organizational meeting of the internal DEQ Pollution Prevention Workgroup, consisting of representatives of key headquarters programs and regional offices, to discuss implementation of the plan;

(2) Assessment of the current status of pollution prevention activities within the agency and other areas, conducted through a survey of program managers and other key staff;

(3) Agency management statement on the importance and relevance of pollution prevention to the agency mission;

(4) List of potential pollution prevention pilot projects within permitting, inspections, enforcement, administration and training operations, as identified by the Workgroup. Plans for each of the projects selected will be drafted for review by senior agency management;

(5) Implementation of pilot projects;

(6) Development of policies, guidance, and training modules based on the successes and difficulties identified through the pilot projects;

(7) Implementation of policies, guidance, and training modules; and,

(8) Periodic follow-up and examination of policies, guidance, and training modules to determine where revisions or further studies are needed.

The survey identified here as Step 2 of the implementation plan was developed and distributed to 80 employees in mid-1994 (the survey is included as Appendix E). One of the survey objectives was to assess the general knowledge of pollution prevention within the agency. Surveyed staff members were asked to identify potential pilot pollution prevention projects and to offer other suggestions for integrating pollution prevention within the agency.

The responses were analyzed and summarized in mid-1994 (a copy of the summary is included as Appendix E). The Department's staff expressed that the best ways to integrate pollution prevention in the agency would be:

- To establish a comprehensive, agency-wide pollution prevention policy, endorsed by the Director of the Department, and for top-level management to support and to encourage pollution prevention activity in all Departmental actions;
- To conduct additional training on pollution prevention strategies for agency-specific functions;
- To improve agency communication concerning new developments and current activities in pollution prevention; and,
- To emphasize the role of the Department as a model agency for environmental conservation and protection as a matter of policy, such as by implementing paper and energy reduction programs, requiring additional recycling for wastes that cannot be reduced in the Department, and promoting the importance of procuring recycled materials.

The workgroup will reconvene in late 1994 to identify those pilot projects that should be pursued (Step 4 of the plan). As outlined in the implementation plan, lessons learned from the pilot projects will assist in the workgroup's efforts to develop policies and guidance on pollution prevention in 1995.

B. Permitting

The Department is seeking actively for opportunities to incorporate pollution prevention into the permitting process, particularly within permitting programs under development as a result of the Clean Air Act Amendments of 1990. For instance, OPP staff is participating in a Title V operating permit workgroup that has examined permit conditions in the context of operational flexibility. Similarly, the Office has worked with air program staff, as suggested by the State Advisory Board, to develop language that would notify permit applicants of the Department's policy on pollution prevention and would identify OPP as

a resource. This language would be included in air permit application forms, which are currently under development. The proposed language is as follows:

> Pollution Prevention Notice
>
> The Virginia Department of Environmental Quality (DEQ) encourages permit applicants to explore pollution prevention options as a way to reduce liability, reduce operating costs, improve the health and safety of employees and the public, and meet environmental standards.
>
> Pollution prevention is the reduction or elimination of environmental pollutants or losses at the source. Methods of pollution prevention include, but are not limited to, employee training through quality management programs; energy efficiency initiatives; improvements in maintenance, housekeeping, and inventory control; materials reformulation or substitution; equipment or process redesign, including closed-loop recycling; or product redesign. Unless risk is substantially reduced, the mere shifting of pollutants from one environmental medium to another (e.g., air to water) is not considered pollution prevention.
>
> The Office of Pollution Prevention, a technical assistance program within DEQ, has a library of journals, books, videos, and other publications on industrial pollution prevention. Free, customized research is available to industries and their consultants. Staff is also available to provide on-site assistance.
>
> Process design and permit pre-application are ideal stages to consider pollution prevention options. DEQ encourages applicants to discuss such options with DEQ regional staff and to contact the Office of Pollution Prevention at (804) 762-4384 for additional information.

In addition to permitting requirements under development in the air program, the Department also is investigating ways of incorporating pollution prevention into existing air, water and waste permits. As an initial step toward this goal, six permit writers from the Department (two from each of the media offices) attended a seminar entitled, "Pollution Prevention Training for Permit Writers," funded by EPA Region III in Annapolis, Maryland in July, 1994. Representatives from all states within Region III and the District of Columbia also attended. Permit writers from states outside the region made presentations and detailed their successes and difficulties in integrating pollution prevention into the permitting process. In addition, exercises on drafting pollution prevention permit language were included. EPA Region III expects to follow this effort with the development of a more formal training program for permit writers.

C. Supplemental Environmental Projects

EPA has established a policy that strongly encourages the incorporation of pollution prevention conditions in enforcement settlements whenever feasible. As outlined in the policy, pollution prevention projects may be included in an enforcement settlement either to correct an existing violation or as the focus of a "supplemental environmental project" (SEP). EPA requires that a nexus, or connection, exist between the violation and the SEP. Rather than merely punishing a violator, the use of an SEP theoretically results in a greater environmental benefit because the source of the violation is eliminated or is reduced significantly by the pollution prevention project. EPA considers the use of SEPs to be appropriate for the following situations:

- Patterns of violations recur and are unlikely to be corrected by additional controls;
- Solutions exist that do not create environmental problems in other media; and,
- Feasible pollution prevention options exist.

Because the Department has been delegated authority to enforce many federal environmental laws, the use of SEPs is available to Department staff as an enforcement tool. SEPs that promote pollution prevention have been incorporated into several compliance orders issued by the Department during 1993 and 1994. For instance, to meet the requirements of an order, a company in Farmville designed and installed a closed-loop solvent recycling system as an alternative to installing conventional air pollution control equipment. In another case, a steel fabricator in Salem converted its painting operation to high-solids paints (high-solids paints contain less solvent than conventional coatings), which significantly reduced VOC emissions.

OPP staff members work with the Department's enforcement staff in the design of these pollution prevention projects. In the amended pollution prevention legislation, the General Assembly authorized the Department to encourage the use of such projects. In response, the Department is expected to expand their utilization in the future.

D. Pollution Prevention Activities in Media Grants

The Pollution Prevention Act of 1990 directs EPA to pursue the environmental and economic advantages of source reduction by promoting pollution prevention throughout the agency's programs. To integrate pollution prevention principles into the media grant programs (e.g., air, water and waste), which are the primary sources of funding that states receive from the federal government for environmental program implementation, EPA issued guidance in late 1992. This guidance has four goals: (1) to promote pollution prevention in state programs that are supported through federal grants, by establishing National Principles to guide workplans negotiated between regional offices and states; (2) to ensure that grant requirements as interpreted by EPA/state workplans are flexible enough to support innovative state pollution prevention activities; (3) to establish a simple accounting process to share information on successful state projects and to identify statutory or other barriers in funding state proposals; and (4) to build sustained state capacity in pollution prevention to the extent consistent with statutory grant requirements. The guidance states that beginning with federal fiscal year 1994, which began on October 1, 1993, EPA grant programs should promote pollution prevention explicitly in state workplans.

The Department has been able to take advantage of this new flexibility on several occasions. For instance, the 1994 workplan for the hazardous waste program includes financial support (approximately $150,000) for OPP staff, who will be responsible for developing materials for hazardous waste inspectors, including training and manuals. Since 1993, EPA has required that the air program designate a pollution prevention point of contact to coordinate with OPP. The air program also received $30,000 for federal fiscal year 1994 specifically to support pollution prevention activities that will involve staff from both the air program and OPP. The Department expects the amount of pollution prevention funding available under the media grants to grow in future years because of the increased emphasis placed on pollution prevention within EPA.

VII. Coordination with Other Organizations

Coordination with other organizations that work to promote pollution prevention is a cornerstone of the Department's strategy to foster the ethic within the Commonwealth. As noted previously in the Introduction, the Department has been charged with a broad mission: to "establish a voluntary pollution prevention assistance program designed to assist all persons in promoting pollution prevention measures in the Commonwealth" (emphasis added). In order to begin meeting that goal, it is absolutely necessary for the Department to take advantage of pollution prevention research, policies, training and informational materials developed by other organizations, particularly state and federal agencies.

A. Coordination with Other Government Agencies

To avoid duplication of effort, OPP works closely with other state pollution prevention programs on issues related to pollution prevention training and informational materials. Two mechanisms for networking with other states have been established: the National Pollution Prevention Roundtable, and the EPA Region III Roundtable.

National Pollution Prevention Roundtable. The National Pollution Prevention Roundtable is an organization of local, state and federal government, industry, and non-government representatives who are interested in advancing the knowledge and practice of pollution prevention. Conferences, which feature policy discussions, training, and innovative programs, are held each spring and fall. The Roundtable, the largest membership organization in the nation dedicated solely to pollution prevention, provides a national forum for promoting the development, implementation and evaluation of efforts to avoid, eliminate or reduce pollution at the source.

The Roundtable's voting membership is comprised of state and local government pollution prevention programs; the Department has been a voting member since 1993. Affiliate members include federal agencies, non-profit groups and private sector interests. Public sector members, located in eighty program offices and in nearly every state, operate programs that provide pollution prevention information and technical assistance to thousands of industrial, commercial and agricultural facilities each year. The information provided helps many of these facilities to reduce their costs of production as well as their expenditures related to environmental compliance, which translates into improved competitiveness and economic growth.

EPA Region III Roundtable. Meetings of the EPA Region III Roundtable, held in the summer and winter, provide the five states and the District of Columbia within EPA Region III the opportunity to exchange information among themselves and with EPA. EPA regional policies, such as mechanisms for grant fund distribution, also are discussed. In addition, the regional meetings are an opportunity for states to discuss cooperative projects and common outreach efforts.

OPP has worked cooperatively with other states and governmental organizations on pollution prevention projects in the past. For instance, OPP's poster highlighting pollution prevention techniques for vehicle maintenance operations (discussed in Section III-C) was produced in cooperation with the Maryland Department of the Environment (MDE) and the Metropolitan Washington Council of Governments (MWCOG). OPP staff developed the concept and design for the poster; however, printing was done as a joint effort in order to reduce the cost per poster. MDE and MWCOG were responsible for the printing and distribution costs for their shares of the posters. The poster, which credits DEQ, eventually was distributed to approximately 10,000 vehicle maintenance shops in Virginia, Maryland and the District of Columbia. A representative of EPA Region I, which includes

the New England states, has recently inquired about its reproducing the poster for distribution to potentially 50,000 vehicle maintenance facilities in the region. In addition to working cooperatively on the vehicle maintenance poster, OPP has served as a reviewer for MWCOG's ongoing reports on pollution prevention in vehicle maintenance.

B. Tidewater Interagency Pollution Prevention Project

In 1990, four military installations in southeastern Virginia initiated a cooperative project that was designed to accelerate the implementation of pollution prevention technologies. The goal of the Tidewater Interagency Pollution Prevention Project (TIPPP) has been to protect the Chesapeake Bay by preventing pollution in its watershed and by reducing environmental management costs. TIPPP uniquely demonstrates how pollution prevention can provide the forum for previously unconnected organizations to work together for their mutual benefit. OPP has participated in TIPPP since 1991. Since that time, TIPPP has expanded to include representatives from nine federal facilities in the Bay watershed.

Participation in this project has led to additional OPP cooperation and interaction with environmental managers at the National Aeronautics and Space Administration's (NASA) Langley Research Center, Langley Air Force Base, Fort Eustis, Yorktown Naval Weapons Station and DOE's Continuous Electron Beam Accelerator Facility (CEBAF) in Newport News. TIPPP has been developing metrics for use in measuring pollution prevention success that will be valuable as OPP considers measurement options in the future. Additionally, OPP hopes to use the success of TIPPP to motivate other federal facilities within the Commonwealth to pursue pollution prevention.

VIII. Program Evaluation and Management

Pollution prevention programs at the local, state and federal levels across the nation often are frustrated in their attempts to measure the impacts of their efforts. Like any prevention program, measuring pollution that did not occur is problematic at best. In addition, because so many forces are acting to reduce the amount of waste generated by industry, governments and citizens, such as the increasing costs of disposal and liability as well as a greater understanding of our impacts on the environment, it is difficult to quantify the amounts of avoided pollution that may be attributed to any particular action. Given this scenario, it is necessary to look for other types of program results and feedback for an indication of OPP's performance.

Anecdotal evidence of the program's effectiveness is always helpful, but it is neither comprehensive nor easily quantifiable. Two other types of qualitative feedback in particular have been useful to OPP's evaluation process in the past two years: a survey of program clients and interaction with the program's advisory committee.

A. 1993 Client Survey Summary

In January, 1993, a survey was sent to 127 industry and government representatives, as well as private individuals, who had made inquiries to OPP during 1992 (OPP was then known as the Waste Reduction Assistance Program). Thirty-eight, or 30 percent, of these surveys were returned. In July 1993, an analysis of the responses was compiled as a report entitled, "Waste Reduction Assistance Program Client Survey," which was distributed to interested parties in the Department. The primary conclusions from the survey were:

- The need in Virginia for the types of outreach efforts undertaken by OPP continues and is growing.
- Video is the preferred medium for delivering industry-specific pollution prevention technical assistance.
- OPP outreach materials could be focused better to present pollution prevention options that may be initiated immediately.
- OPP "customer service" is excellent.
- Industry needs assistance in understanding environmental regulations.
- Industry is very interested in financial assistance for pollution prevention, preferably in the form of tax relief for equipment purchases.

OPP took action based on these observations almost immediately with the development of its first video, as described in Section III-C. Further steps have been taken since the time of the survey to expand OPP outreach efforts, to increase the utilization and usefulness of program products, and to improve the focus of materials that are developed.

B. Virginia Pollution Prevention Advisory Committee

The pollution prevention legislation adopted by the General Assembly in 1993 authorizes the formation of advisory panels to assist the Department in administering its pollution prevention program. In early 1994, the Department created the Virginia Pollution Prevention Advisory Committee, a 23-member panel that consists of representatives from industry, education, environmental and public interest groups, and local, state and federal government organizations (a membership list is included as Appendix F).

The advisory committee meets on a quarterly basis. Three subcommittees have been formed to concentrate on the following issues: (1) resources that are available within Virginia to support pollution prevention initiatives; (2) resources that are available from the federal government to support pollution prevention initiatives; and (3) university-based pollution prevention outreach programs.

The first two subcommittees have been charged with investigating additional funding sources that are available to the Department and other organizations interested in

providing pollution prevention technical assistance services within the Commonwealth and at the federal level. To date, a number of potential sources of funding, including DOE and EPA's Environmental Technology Initiative, have been identified. The third subcommittee, which focuses on pollution prevention activities within Virginia's universities, coordinates its activities with the DEQ-University Pollution Prevention Workgroup.

The advisory committee has discussed program directions with OPP staff and the DEQ Director. Presentations from other organizations involved in promoting pollution prevention within Virginia have included: Virginia Power's ConserVision Program; the Institute for Environmental Negotiation and the UVA Darden School's project for small businesses, undertaken with the Management Institute for Environment and Business; update from EPA Region III staff; the Institute for Cooperation in Environmental Management's retired engineer technical assistance project in the Philadelphia area; and the Chesapeake Bay Pollution Prevention Program.

The Advisory Committee has made several suggestions to the Department regarding pollution prevention activities. According to the committee, the Department needs to:

- Maximize the voluntary technical assistance that is available;
- Integrate pollution prevention within the entire Department structure;
- Coordinate with EPA regarding federal voluntary pollution prevention programs;
- Continue to investigate ways of removing regulatory barriers; and,
- Keep the program broadly focused to include organizations other than manufacturers.

Future efforts planned for the advisory committee include coordinating with other groups that are examining pollution prevention efforts in Virginia, including the State Advisory Board to the Air Pollution Control Board and the Joint Subcommittee Studying Pollution Prevention.

IX. Future Directions

Pollution prevention has become accepted widely as the management strategy of choice for an increasing number of environmental problems. Pollution prevention's mutual goals of promoting environmental quality and economic growth become evident from the cost savings, increased efficiency, and greater environmental protection that result once this approach is implemented. For these reasons, pollution prevention has been adopted as a primary strategy to confront the environmental problems that currently challenge Virginia.

A. Chesapeake Bay Program

On October 14, 1994 the signatories to the Chesapeake Bay Agreement (which is comprised of the Governors of Virginia, Pennsylvania and Maryland; the Mayor of the District of Columbia; the Chairman of the Chesapeake Bay Commission; and the Administrator of EPA), signed the "Chesapeake Bay Basinwide Toxics Reduction and Prevention Strategy." The plan resulted from a reevaluation of the original toxics reduction strategy, which had been adopted in 1987. This analysis found that, while significant steps toward controlling and reducing toxics have been made, toxics problems continue to exist in the Bay. To address this impact, the following goal was adopted:

> Our goal is a Chesapeake Bay free of toxics by reducing or eliminating the input of chemical contaminants from all controllable sources to levels that result in no toxic or bioaccumulative impact on the living resources that inhabit the Bay or on human health.

As outlined in the strategy, four areas of concern are emphasized: regional focus, directed toxics assessments, regulatory program implementation and pollution prevention.

The signatories recognized pollution prevention "as the preferred approach to reducing risks to human health and living resources due to exposure to chemical contaminants within the Chesapeake Bay watershed and as the principal means to offset increases in loadings due to land use changes and pollution growth in the Bay basin."

Building on existing state and federal pollution prevention programs, the strategy includes the following objective:

> Promote pollution prevention education and technical assistance programs within all levels of government -- federal, state, and local -- throughout the Chesapeake Bay watershed, and aid commercial and industrial establishments [in] incorporating pollution prevention actions into their daily business activities.

Specific commitments integral to the strategy involve the following:

- Achieve a 75% voluntary reduction in releases and off-site transfers by federal facilities by the year 2000 of those chemicals reported under the Toxics Release Inventory and the Chesapeake Bay Toxics of Concern.

- Develop a voluntary, cooperative Chesapeake Bay Pollution Prevention Program for industry with reduction targets of 50% for Toxic Release Inventory chemicals and 75% for Chesapeake Bay Toxics of Concern by the year 2000; the targets will be evaluated during the next year.

- Achieve a participation rate in pollution prevention of 75% of industrial facilities and commercial establishments in the Chesapeake Bay basin by the year 2000.

- Achieve voluntary participation in pollution prevention by all state and local governments within the Chesapeake Bay basin by the year 2000.

The Toxics Subcommittee has begun implementation of the strategy. As a first step, the membership and workgroup structure will be reviewed to ensure that appropriate groups, such as industry and state pollution prevention programs (including Virginia's), are represented. A Pollution Prevention Workgroup will be established to help implement the tasks delineated in the plan.

Additionally, the Bay Program's budget includes funds to support contractor services, to assist in the implementation of the strategy's pollution prevention commitments. Specific tasks will include:

- Provision of expert analysis concerning industry's technological capabilities to achieve further reductions in releases, and the identification of opportunities to target additional education and technology transfer efforts for industry. The analysis will assist in evaluating the reduction target goals and in developing appropriate baselines, as required by the strategy;

- Assistance in compiling and evaluating information to target pollution prevention activities at federal facilities;

- Development of a design for a basin-wide communication and education program directed toward reducing consumer usage of products that contain harmful chemicals; and,

- Acquisition and analysis of data on commercial and residential integrated pest management activities to support the establishment of a reduction goal for commercial and residential lands.

B. Future Grant-Funded Projects

The Department expects to continue competing for EPA's funding of pollution prevention initiatives and to work in developing cooperative efforts with other organizations. For instance, in the fall of 1994, the Department submitted a letter of support regarding the Department of Economic Development's proposal to empower Virginia's 23 small business development centers in providing pollution prevention information to their clients. In this case, only the small business development centers were eligible for the funding, which was offered by the U.S. Small Business Administration. The Department's letter of support

enhanced the proposal, and if implemented, the project will strengthen the Department's ability to disperse pollution prevention information to Virginia's small businesses.

OPP staff also is working with the Pollution Prevention Advisory Committee to explore federal funding opportunities outside of EPA. For instance, the National Institute of Standards and Technology (NIST) is building a network of manufacturing extension centers throughout the country that are intended to increase manufacturing efficiency. NIST has recognized that pollution prevention is a key strategy in achieving efficiency and is promoting actively the cooperative efforts between state pollution prevention programs and NIST-funded centers. OPP will be working with the Department of Economic Development and the Center for Innovative Technology to insure cooperation within Virginia.

DOE also has indicated that significant sources of federal funding will be available to support the development of pollution prevention technologies. While the Department may not be the appropriate establishment to perform research and development, OPP will work with those organizations, such as universities, that may be interested in competing for this funding.

X. Conclusion

The Department has made significant progress in its pollution prevention efforts from 1993-1994. Building on activities that were initiated before the creation of the Department of Environmental Quality in 1993, and with Virginia pollution prevention legislation as a guide, the Office of Pollution Prevention has secured its role as the focal point of pollution prevention activities within the Commonwealth.

Response to the program, its staff and its services has been overwhelmingly positive, as evidenced by survey responses and other feedback. Businesses, particularly manufacturers who are subject to an increasing number of costly environmental regulations, appreciate the dual goals of pollution prevention: promoting environmental quality and economic growth.

In the coming year, the Department will continue to work cooperatively with other organizations throughout Virginia to maximize the amount of information and other resources available to industry, government and citizens relating to pollution prevention. The Department expects to make significant progress in integrating the voluntary pollution prevention concept within regulatory functions. Finally, OPP plans to continue and in some instances expand its various outreach efforts, including the development of information products, training and on-site technical assistance.

Appendix A
Virginia Pollution Prevention Legislation

§10.1-1425.10. Definition

As used in this article, unless the context requires a different meaning,

"Pollution prevention" means eliminating or reducing the use, generation or release at the source of environmental waste. Methods of pollution prevention include, but are not limited to, equipment or technology modifications; process or procedure modifications; reformulation or redesign of products; substitution of raw materials; improvements in housekeeping, maintenance, training, or inventory control; and closed-loop recycling, onsite process-related recycling, reuse or extended use of any material utilizing equipment or methods which are an integral part of a production process. The term shall not include any practice which alters the physical, chemical, or biological characteristics or the volume or an environmental waste through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service, and shall not include treatment, increased pollution control, off-site or nonprocess-related recycling, or incineration.

"Toxic or hazardous substance" means (I) all of the chemicals identified on the Toxic Chemical List established pursuant to §313 of the Emergency Planning and Community Right-to-Know Act, 42 U.S.C. §11001 et seq, (P.L. 99-499), and (ii) all of chemicals listed pursuant to §§ 101 (14) and 102 of the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601 et seq. (P.L. 92-500).

§10.1-1425.11. Establishment of pollution prevention policy.-It shall be the policy of the Commonwealth (i) that the Commonwealth should encourage pollution prevention activities by removing barriers and providing incentives and assistance, and (ii) that the generation of environmental waste should be reduced or eliminated at the source whenever feasible; environmental waste that is generated should be reused whenever feasible; environmental waste that cannot be reduced or reused should be recycled whenever feasible; environmental waste that cannot be reduced, reused, or recycled should be treated in an environmentally safe manner; and disposal should be employed only as a last resort and should be conducted in an environmentally safe manner. It shall also be the policy of the Commonwealth to minimize the transfer of environmental waste from one environmental medium to another.

§10.1-1425.12. Pollution prevention assistance program.

The Department shall establish a voluntary pollution prevention assistance program designed to assist all persons in promoting pollution prevention measures in the Commonwealth. The program shall emphasize assistance to local governments and businesses that have inadequate technical and financial resources to obtain information and to assess and implement pollution prevention measures. The program may include, but shall not be limited to:

1. Establishment of a pollution prevention clearinghouse for all available information concerning waste reduction, waste minimization, source reduction, economic and energy savings, and pollution prevention;

2. Assistance in transferring information concerning pollution prevention technologies through workshops, conferences and handbooks;

3. Cooperation with university programs to develop pollution prevention curricula and training;

4. Technical assistance to generators of toxic or hazardous substances, including onsite consultation to identify alternative methods that may be applied to prevent pollution; and

5. Researching and recommending incentive programs for innovative pollution prevention programs.

To be eligible for onsite technical assistance, a generator of toxic or hazardous substances must agree to allow information regarding the results of such assistance to be shared with the public, provided that the identity of the generator shall be made available only with its consent and trade-secret information shall remain protected.

§10.1-1425.13. Pollution prevention advisory panels.-The Director is authorized to name qualified persons to pollution prevention advisory panels to assist the Department in administering the pollution prevention assistance program. Panels shall include members representing different areas of interest in and potential support for pollution prevention, including industry, education, environmental and public interest groups, state government and local government.

§10.1-1425.14. Pilot projects.-The Department may sponsor pilot projects to develop and demonstrate innovative technologies and methods for pollution prevention. The results of all such projects shall be available for use by the public, but trade secret information shall be protected.

§10.1-1425.15. Waste exchange.-The Department may establish an industrial environmental waste material exchange that provides for the exchange, between interested persons, of information concerning (i) particular quantities of industrial environmental waste available for recovery; (ii) persons interested in acquiring certain types of industrial environmental waste for purposes of recovery; and (iii) methods for the treatment and recovery of industrial environmental waste. The industrial environmental waste materials exchange may be operated under one or more reciprocity agreements providing for the exchange of the information for similar information from a program operated in another state. The Department may contract for a private person or public entity to establish or operate the industrial environmental waste materials exchange. The Department may prescribe rules concerning the establishment and operation of the industrial environmental waste materials exchange, including the setting of subscription fees to offset the cost of participating in the exchange.

§10.1-1425.16. Trade secret protection.-All trade secrets obtained pursuant to this article by the Department or its agents shall be held as confidential.

§10.1-1425.17. Evaluation report.-The Department shall submit an annual report to the Governor and the appropriate committees of the General Assembly. The report shall include an evaluation of its pollution prevention activities. The report shall be submitted by December 1 of each year, beginning in 1994. The report shall include, to the extent available, information regarding progress in expanding pollution prevention activities in the Commonwealth.

§10.1-1425.18. Pollution prevention grants.-The Department may make grants to identify pollution prevention opportunities and to study or determine the feasibility of applying specific technologies and methods to prevent pollution. Persons who use, generate or release environmental waste may receive grants under this section.

§10.1-1425.19. Inspections and enforcement actions by the Department.

A. The Department shall seek to ensure, where appropriate, that any inspections conducted pursuant to Chapters 13 (§10.1-1300 et seq.) and 14 (§10.1-1400 et seq.) of Title 10.1 and Chapter 3.1 (§62.1-44.2 et seq) of Title 62.1 (I) are multimedia in approach; (ii) are performed by teams of inspectors authorized to represent the air, water and solid waste programs within the Department; and (iii) minimize duplication of inspections, reporting requirements, and enforcement efforts.

B. The Department may allow any person found to be violating any law or standard for which the Department has enforcement jurisdiction to develop a plan to reduce the use or generation of toxic or hazardous substances through pollution prevention incentives or initiatives and, to the maximum extent possible, implement the plan as part of coming into compliance with the violated law or standard. This shall in no way affect the Commonwealth's ability and responsibility to seek penalties in enforcement activities.

Appendix B
Joint Subcommittee Studying Pollution Prevention Legislation Members

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Delegate Gladys B. Keating, *Vice Chairman*
Senator Janet D. Howell
Senator Frederick M. Quayle
Delegate Flora D. Crittenden
Delegate Phillip A. Hamilton
Delegate Kenneth R. Plum
Michael J. Campilongo, Esquire
Kimberly L. Coble, Chesapeake Bay Foundation
The Honorable Elizabeth H. Haskell
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James C. McKean, Department of Economic Development

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Appendix D

[Insert graphic of DEQ Regional Office Map]

Appendix E
DEQ Pollution Prevention Implementation Plan, Survey and Survey Summary

1. Background

The DEQ Pollution Prevention Implementation Plan has been developed consistent with the goal of promoting pollution prevention included in the agency's operating principles and in the 1993 pollution prevention legislation adopted by the Virginia General Assembly.

This plan is intended to be a dynamic document that will be revised over time as Department experience with pollution prevention develops. Key to the success of the plan is effective communication among agency staff, and a significant portion of the plan will focus on developing and fostering methods of communication.

2. Roles and Responsibilities

Although the Office of Pollution Prevention, within the Division of Policy and Research, has primary responsibility for promoting pollution prevention concepts, all programs within the agency have agreed that they must be involved for the plan to be successful. Specific roles and responsibilities of agency programs are identified below:

a. Office of Pollution Prevention

- Establish and support internal DEQ Pollution Prevention Workgroup consisting of representatives of key headquarters programs and all regional offices
- Develop and maintain methods of regular communication for agency staff in general and the internal DEQ Pollution Prevention Workgroup in particular
- Assist in the development and delivery of training for agency staff
- Provide information and research in response to staff inquiries
- Provide to and receive from staff of Public Affairs advice and assistance in the development of outreach materials such as videotapes, posters, brochures, etc.
- Provide to and receive from staff of Public Affairs advice and assistance in conference and workshop planning
- Work with the Human Resources staff to investigate opportunities to incorporate pollution prevention concepts within position descriptions
- Staff the external Pollution Prevention Advisory Committee

b. Training Office

- Designate staff representative to serve on the internal DEQ Pollution Prevention Workgroup
- Work with the Human Resources staff to investigate opportunities to incorporate pollution prevention concepts within position descriptions
- Work cooperatively with Office of Pollution Prevention staff in developing training programs on pollution prevention

c. Human Resources

- Designate staff representative to serve on the internal DEQ Pollution Prevention Workgroup
- Investigate methods to incorporate pollution prevention concepts within position descriptions

d. Operations

- Designate staff representatives from enforcement, permitting and inspections programs (including regional offices) to serve on the internal DEQ Pollution Prevention Workgroup
- Work with the Human Resources staff to investigate opportunities to incorporate pollution prevention concepts within position descriptions
- Promote the Department's pollution prevention services

e. Public Affairs

- Designate staff representative to serve on the internal DEQ Pollution Prevention Workgroup
- Work cooperatively with Office of Pollution Prevention staff to develop a newsletter to communicate information on pollution prevention
- Provide to and receive from the Office of Pollution Prevention advice and assistance in the development of outreach materials such as videotapes, posters, brochures, etc.
- Work with the Human Resources staff to investigate opportunities to incorporate pollution prevention concepts within position descriptions
- Provide to and receive from the Office of Pollution Prevention advice and assistance in conference and workshop planning

f. Intergovernmental Affairs

- Designate staff representative to serve on the internal DEQ Pollution Prevention Workgroup
- Promote the Department's pollution prevention services
- Encourage state agencies to adopt pollution prevention strategies

- Work with the Human Resources staff to investigate opportunities to incorporate pollution prevention concepts within position descriptions

g. Procurement

- Designate staff representative to serve on the internal DEQ Pollution Prevention Workgroup
- Work with the Office of Pollution Prevention to make available to agency staff information on less hazardous products
- Work with the Human Resources staff to investigate opportunities to incorporate pollution prevention concepts within position descriptions

h. Permit Assistance

- Designate staff representative to serve on the internal DEQ Pollution Prevention Workgroup
- Work with the Office of Pollution Prevention to make pollution prevention information available to small businesses
- Work with the Human Resources staff to investigate opportunities to incorporate pollution prevention concepts within position descriptions

3. Specific Plan Activities

The DEQ Pollution Prevention Implementation Plan will be undertaken through a series of steps involving an assessment of current activities, the development of pilot projects and the development of policies, guidance and training modules based on the outcomes of the pilot projects. Plan progress will be continually evaluated, and adjustments in the implementation plan will be made accordingly.

Steps:

1. Organizational meeting of the internal DEQ Pollution Prevention Workgroup, consisting of representatives of key headquarters programs and regional offices, to discuss implementation of the plan. A survey will developed by the OPP staff to assess the level of knowledge about pollution prevention and the current status of pollution prevention activities within the agency will be reviewed by the Workgroup. The survey will solicit ideas for pollution prevention pilot projects. Program areas as well as individual staff to be surveyed will be identified. (April)

2. Assessment of the current status of pollution prevention activities within Operations and other areas conducted through a survey of program managers and other key staff. The survey will be sent to approximately 100-

150 employees for completion. A series of follow-up face-to-face interviews will be conducted with a smaller number of staff by OPP staff to explore issues raised in the survey responses. Responses will be processed, analyzed and summarized. (April/May)

3. As necessary, agency management will outline the importance and relevance of pollution prevention to the agency mission. The memo will also introduce or reinforce the awareness of the Office of Pollution Prevention's services. Also, the memo will explain the process that has been developed to begin institutionalizing pollution prevention within the agency. Members of the internal DEQ Pollution Prevention Workgroup will be listed as contacts for agency staff. (April)

4. List of potential pilot projects within the program areas of permitting, inspections, enforcement, administration and training identified by Workgroup. Plans for each of the projects selected will be drafted for review by senior agency management. The external Pollution Prevention Advisory Committee will be briefed on the pilot projects identified. (Summer)

5. Implementation of pilot projects. (Fall)

6. Development of policies, guidance and training modules based on successes and difficulties identified through the pilot projects. The external Pollution Prevention Advisory Committee will be briefed on the policies, guidance and training modules. (Winter, 1995)

7. Implementation of policies, guidance and training modules. (Ongoing basis, beginning Winter/Spring, 1995)

8. Regular follow up and examination of policies, guidance and training modules to determine where revisions or further studies are needed. The Pollution Prevention Advisory Committee will make recommendations to the agency on future directions.

To: Selected Department Division Directors, Office Managers and Program Managers

From: Richard N. Burton, Director

Subject: DEQ Pollution Prevention Survey

Date: April 20, 1994

In 1993 and 1994, the General Assembly adopted legislation establishing pollution prevention as the preferred environmental management strategy for the Commonwealth. In order to integrate pollution prevention concepts throughout the Department, a workgroup has been formed to identify opportunities for pollution prevention implementation. As a first step, the workgroup has developed the attached survey to assess both the level of understanding and current activities related to pollution prevention. Please assist the workgroup by completing the survey.

I look forward to working with you in the future to make the complete integration of pollution prevention within the Department a reality.

Attachment

DEQ Pollution Prevention Survey
April 20, 1994

In 1993, the General Assembly passed legislation establishing pollution prevention as the environmental management strategy of choice for the Commonwealth, similar to the action taken by Congress in 1990 with the federal Pollution Prevention Act. Definitions of pollution prevention vary. In the Virginia law, pollution prevention is defined as "eliminating or reducing the use, generation or release at the source of environmental waste."

Source reduction is the "first" step in the environmental management hierarchy. As outlined in both the national and Virginia laws, source reduction or pollution prevention is the preferred approach.

However, wastes that cannot be eliminated should be managed in the following order of preference: recycle/reuse; treatment; disposal/environmental release. The Department has programs that focus on each of these management techniques.

Examples of pollution prevention techniques listed in Virginia's law include, "equipment or technology modifications; process or procedure modifications; reformulation or redesign of products; substitution of raw materials; improvements in housekeeping, maintenance, training, or inventory control; and closed-loop recycling, on-site process-related recycling, reuse or extended use of any material utilizing equipment or methods which are an integral part of a production process."

Consistent with the agency's operating principles, pollution prevention should be an integral aspect of every agency program. In order to accomplish this, a DEQ Pollution Prevention Implementation Plan has been developed by the DEQ Pollution Prevention Workgroup (which consists of representatives from a variety of agency programs). The Workgroup is interested in all types of pollution prevention, from its use in permits, enforcement settlements and inspection protocols to its use in procurement to the prevalence of office waste reduction techniques (e.g., double-sided copying, use of electronic mail, etc.).

The attached survey, which represents the first phase of the implementation plan, is designed to assess the level of knowledge about pollution prevention and the current status of pollution prevention activities within the agency. It is being sent to approximately 80 Department employees. As a follow-up, a smaller number of agency staff will be interviewed next month to explore issues raised in the survey responses. Once this process is complete, there will be an opportunity for all Department staff to provide input.

Based on the results of the survey responses and interviews, a number of pilot projects that incorporate pollution prevention will be developed for implementation during late 1994 and early 1995. Lessons learned from the pilot projects will be incorporated into agency policies and guidance to be developed next winter.

Based on the implementation process outlined above, it is clear that assessing the current status of pollution prevention implementation and knowledge is critical to the success of our efforts. Similarly, the cooperation of the entire agency will be required to make pollution prevention a reality within the agency.

Thanks in advance for your cooperation. If you have any questions, or would prefer to discuss your responses face-to-face rather than put them in writing, please contact any of the DEQ Pollution Prevention Workgroup members listed below.

<u>DEQ Pollution Prevention Workgroup</u>

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David Timberline, Office of Pollution Prevention	(804) 762-4347
Josh Heltzer, Office of Pollution Prevention	(804) 762-4235
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Richard Rasmussen, Small Business Assistance Office	(804) 762-4394
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Please complete the questions below and return by Tuesday, May 10 to Sharon K. Baxter, Office of Pollution Prevention, 629 East Main Street (7th Floor), Richmond, (804) 762-4346 (fax). If you are a Regional Director, please discuss the questions with your staff and respond as an office (differing opinions can be included -- consensus is not required).

Name: _____ Phone: _____
Program: _____

1. Are you familiar with DEQ's Office of Pollution Prevention and the services it offers?
   Yes ___ No ___
   If yes, how and when were you made aware of the program?

2. Have you seen the *Pollution Prevention Virginia* newsletter? Yes __ No ___Do you think it is a good communication mechanism? Yes __ No __
   Are there additional ways to update staff on Office of Pollution Prevention activities?

3. Have you come across or initiated any efforts to encourage pollution prevention within the Department's general office activities such as reducing paper waste or conserving energy?
   Yes ___ No ___
   If yes, briefly describe.

4. If you are not within Operations, please skip to question 5.
   Have you:
   a. Read any technical reports on pollution prevention that were helpful in your current position? Yes __ No __
   b. Discussed and/or implemented pollution prevention options with the public (e.g., industry, local governments, state agencies, citizens, etc.)? Yes __ No __ (If yes, please attach relevant documentation such as memos, reports, etc.)
   c. Noticed more interest in pollution prevention from the regulated community?

      Yes __ No __

5. a. What opportunities (e.g., revision of policies and manuals) can you think of to incorporate pollution prevention into the Department's daily operations (including both external and internal activities)? This may include opportunities related to procurement, agency administration, inspections, permitting, enforcement actions, etc.

   b. Similarly, are you aware of a specific situation (e.g., agency procurement action, inspection, permit or enforcement settlement) pending or expected within the next few months that may be a good candidate for a pilot pollution prevention project (e.g., ABC Chemical is expected to submit a permit application in September that you expect may present pollution prevention opportunities, the Department will be procuring a certain type of office supply that may be available in a more "environmentally friendly" form than is normally purchased, etc.)

6. a. Do you think that there is a good general understanding of pollution prevention consistent with Virginia's definition (included in the attached memo):

	Poor				Adequate					Excellent
Among the regulated community?	1	2	3	4	5	6	7	8	9	10
Within the Department?	1	2	3	4	5	6	7	8	9	10
Within your Division?	1	2	3	4	5	6	7	8	9	10

   b. How can the awareness of pollution prevention concepts throughout the agency be improved or reinforced?

7. a. What difficulties could you anticipate to incorporating pollution prevention concepts within the agency?
   b. In what ways could these be overcome?

8. Have you had specific training in pollution prevention? Yes __ No __
   If not, what type of pollution prevention training are you interested in receiving?

9. What types of pollution prevention information would be helpful to your program or office staff (e.g., reports, factsheets, contacts within other states, etc.)?

Summary of DEQ Survey Results

The DEQ Pollution Prevention Integration Survey was distributed selectively in Spring, 1994 to 80 staff members who were determined to have a potentially significant impact on the integration of the pollution prevention (P2) concept throughout the agency. OPP received a superb response, with 78 surveys tabulated and compiled. For a detailed compilation of responses, please consult with OPP staff for a copy.

DEQ staff determined that the best ways to integrate P2 in the agency are as follows:

- Policy from the Director should require strategic planning and the incorporation of P2 in all staff functions, and peer leadership should show that it is encouraged, expected, and demanded;

- OPP should provide additional education/training that discusses how to implement P2 strategies throughout agency activities (i.e., concrete examples on how to carry out P2 as an agency);

- OPP should increase communication about P2 activities and new P2 developments throughout DEQ -- via E-mail, newsletter, fact sheets, success stories, and videos;

- DEQ should create a policy that requires all of its offices to reduce paper and energy consumption, which would serve as an appropriate model of environmental conservation for the community-at-large; and,

- Policy should require additional recycling in DEQ and strongly promote the procurement of recycled materials.

Staff noticed much more interest in P2 from the regulated community. Survey respondents also felt that OPP's continued outreach efforts to prevent pollution have been very helpful and productive and should continue. OPP, based on suggestions by staff, is currently developing a list of potential pilot P2 projects and evaluating project feasibility for implementation by different DEQ divisions.

Survey respondents also noted that paper reduction, energy conservation, and recycling efforts are the best ways to practice P2 in their office operations and should be standard procedure, considering that DEQ should serve as a model for other agencies in protecting the environment. The survey also serves as an important tool for OPP in measuring the current levels of understanding and practice of the P2 concept in DEQ; survey responses suggested moderate levels of knowledge of the P2 ethic in the Department and the regulated community.

Appendix F
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